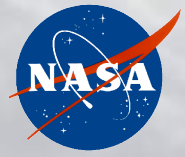

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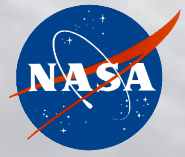
Operations and Calibration Status

Denis Elliott

May 21, 2013



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AIRS Operations Status

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AIRS Operational Status

- **AIRS is in excellent health**
- **All engineering parameter plots versus time are either flat or changing extremely slowly—no concerns**
- **Some channels have degraded noise performance due to radiation dosage**
  - ***A new gain table update is under development***
  - ***We expect to improve the noise behavior of roughly 10 channels, including one used by George in his analysis of instrument trends***
- **We had two short-lived anomalies this year**
  - ***February 8—scanner shut down for about 28 hours***
  - ***April 5—high rate data did not make it to the ground for 25 hours***

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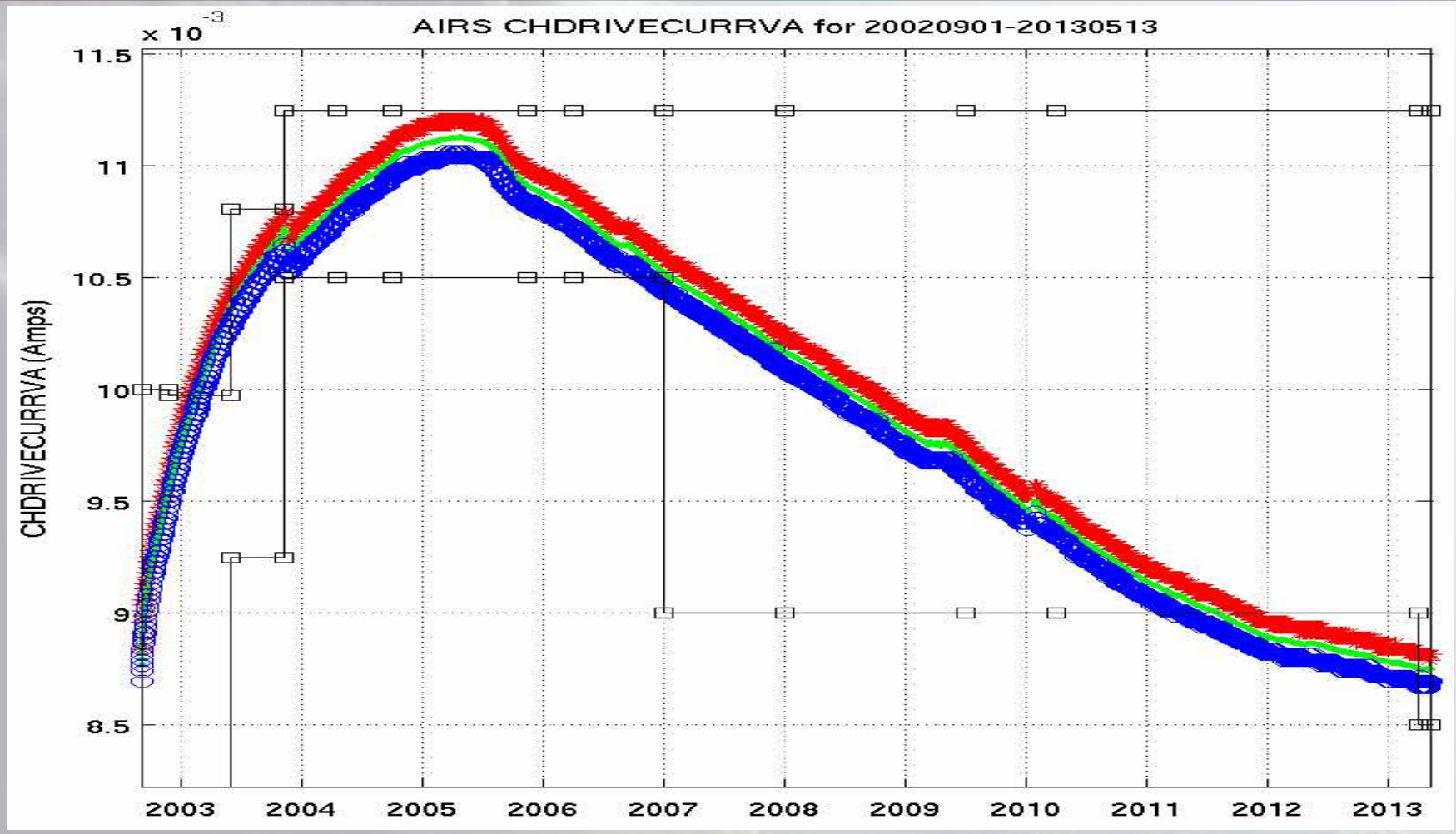
AIRS Chopper Drive Current



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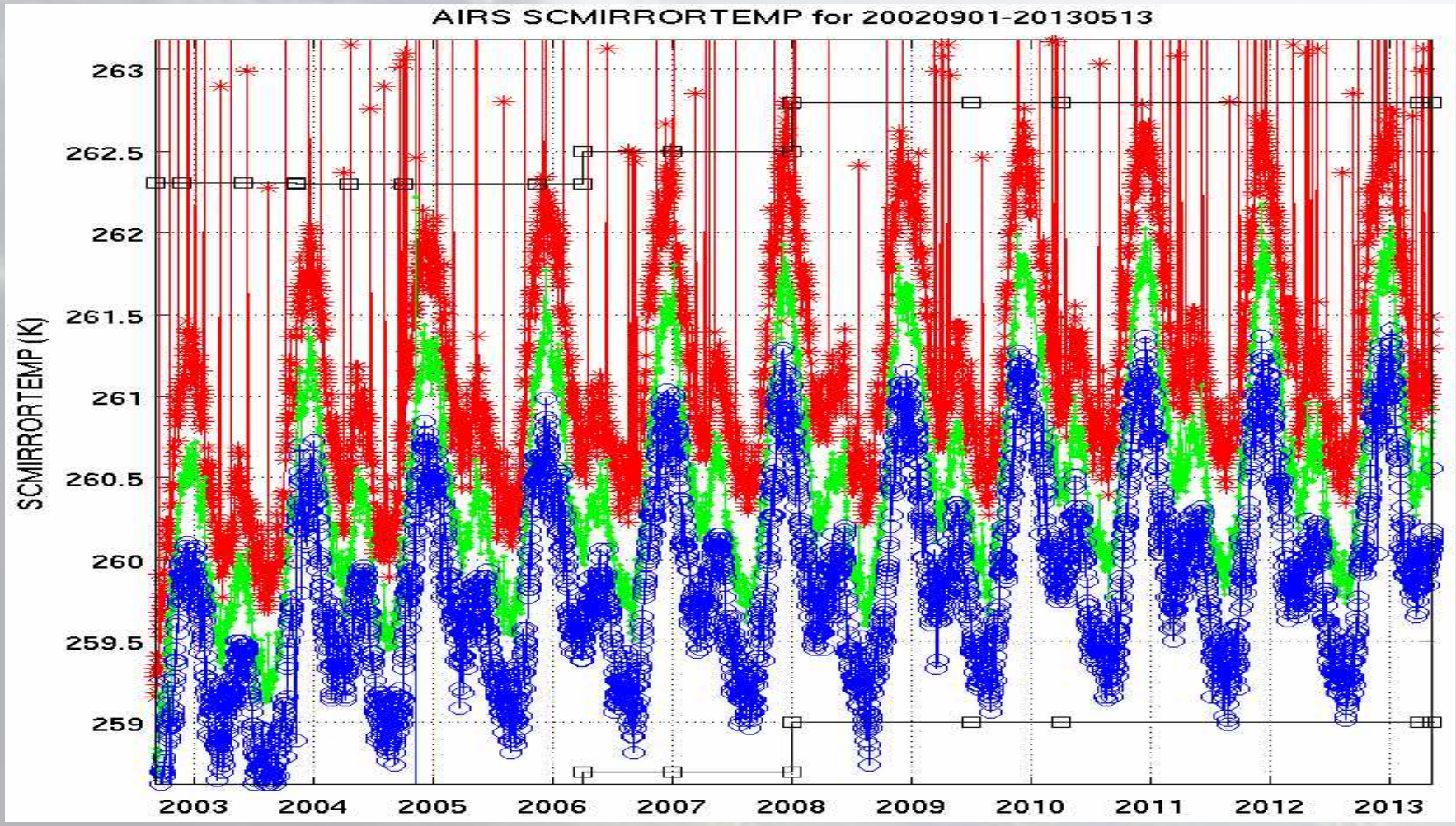
AIRS Scan Mirror Temperature



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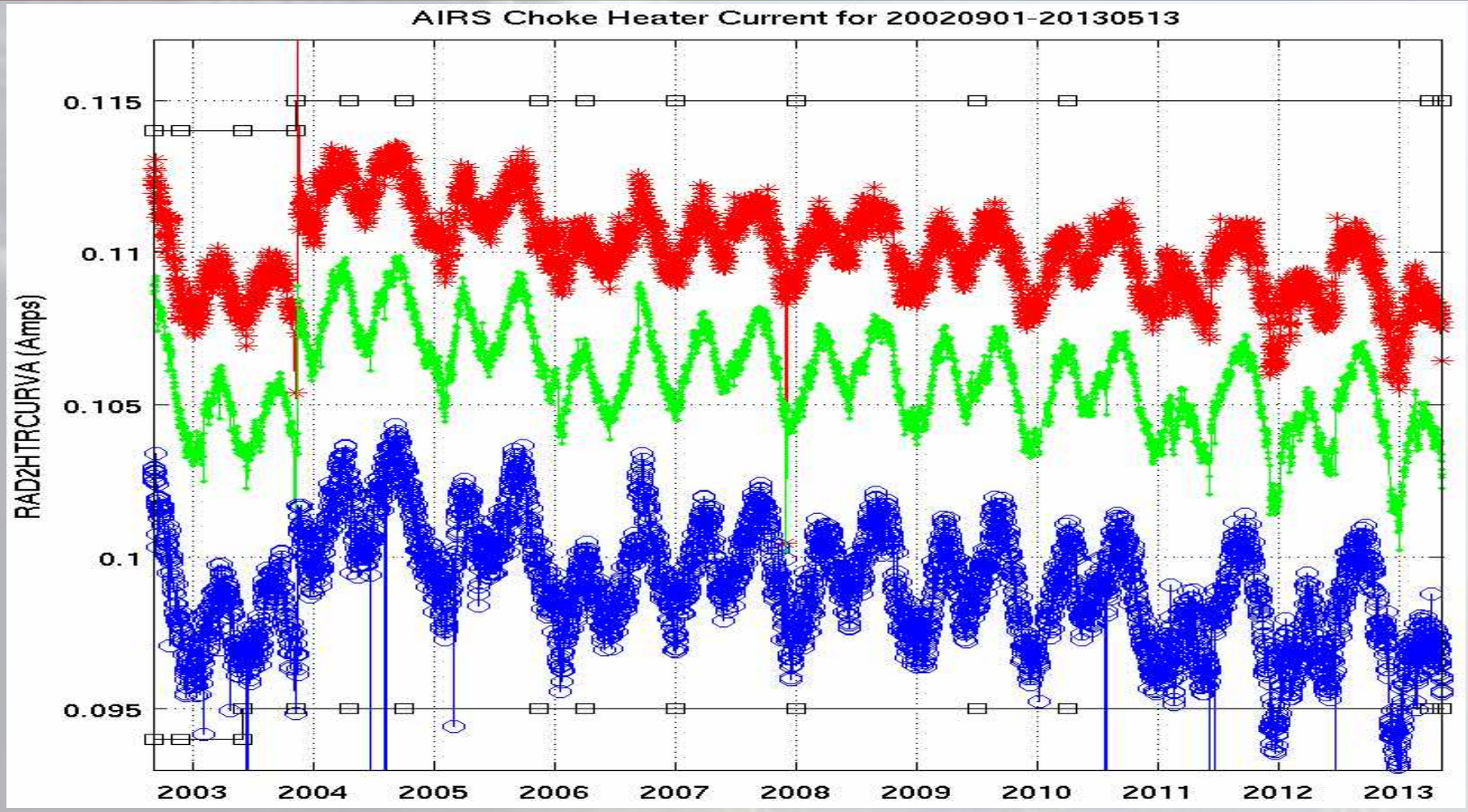
AIRS Choke Point Heater Current



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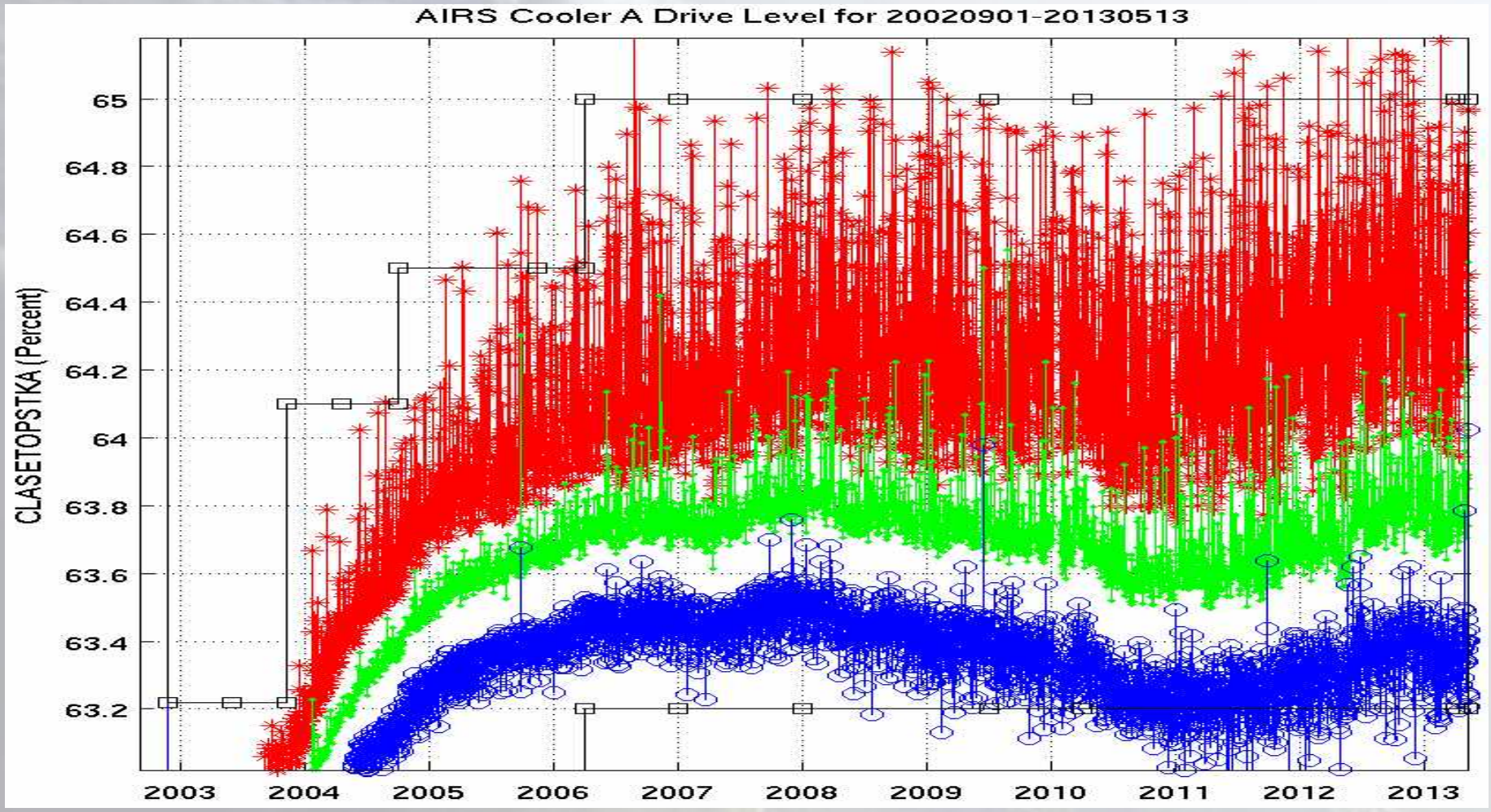
AIRS Cooler A Drive Level



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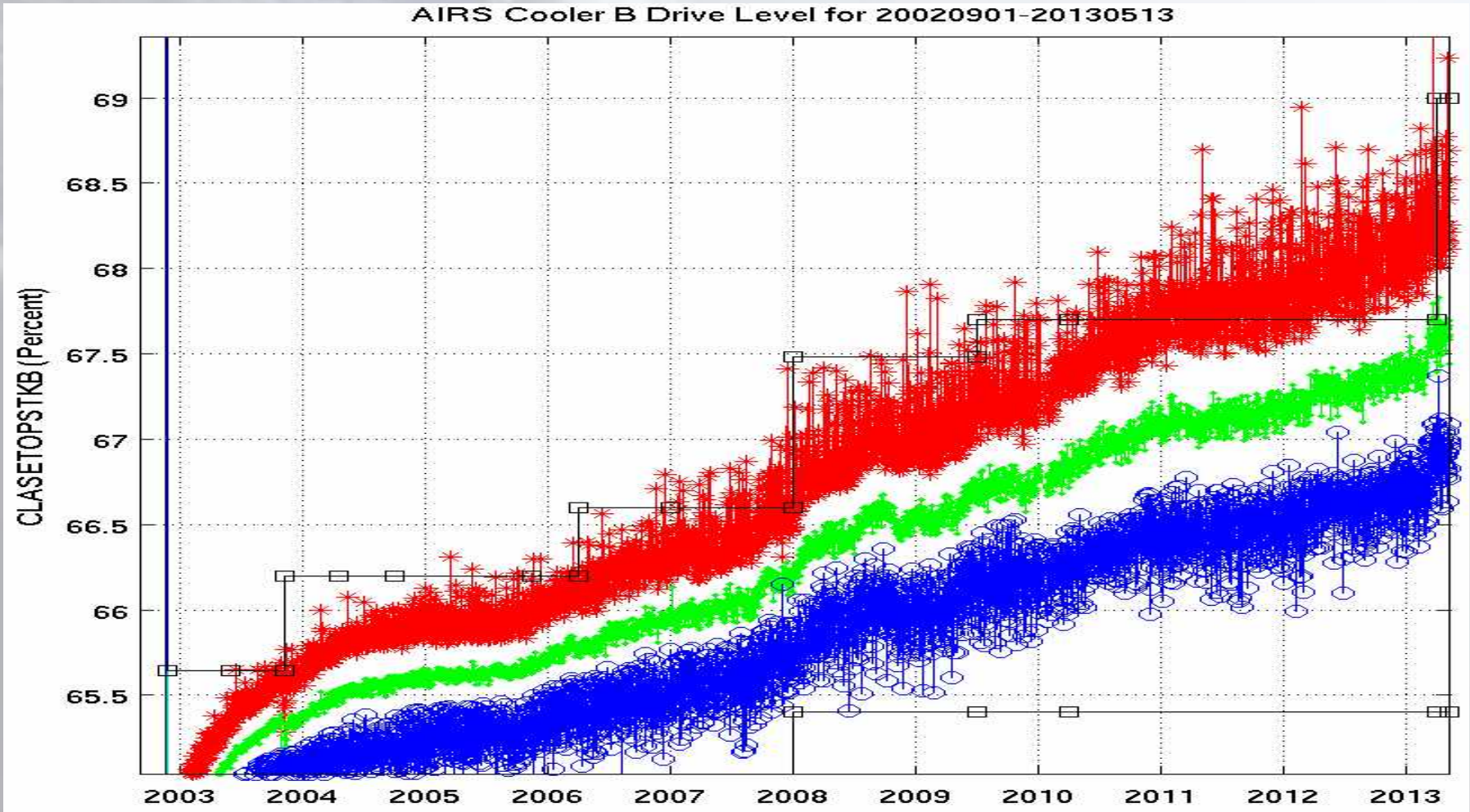
AIRS Cooler B Drive Level



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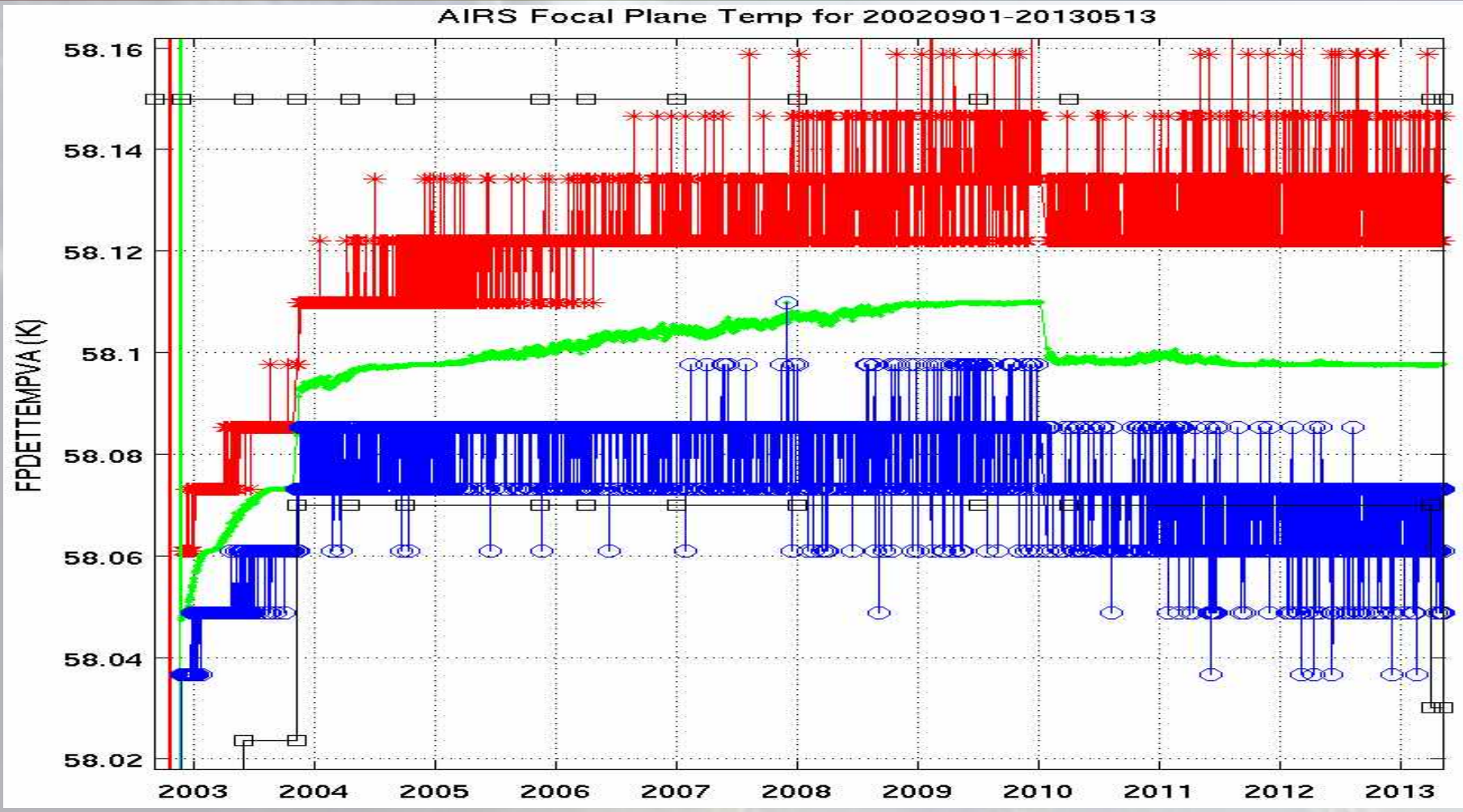
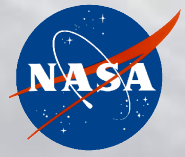
AIRS Focal Plane Temperature





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AMSU-A Status

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AMSU-A Operational Status

- **AMSU-A mechanical parts and most of the electronics are in good health**
- **All engineering parameter trends are slow**
- **The A1-1 and A1-2 scanner currents are rising, but very slowly and are not alarming**
- **10 of the 15 channels are healthy, but**
  - ***Channel 4 failed in 2007 (declared non-operational on October 1 2007)***
  - ***Channel 5 is now too noisy to contribute to Level 2***
  - ***Channel 7 noise has exceeded specs since launch and has never been used for L2***
  - ***Channel 6 has been degrading slowly since 2008, but is still a good channel***
  - ***Channel 1 began degrading in January 2012, but seems to be returning to its original condition***

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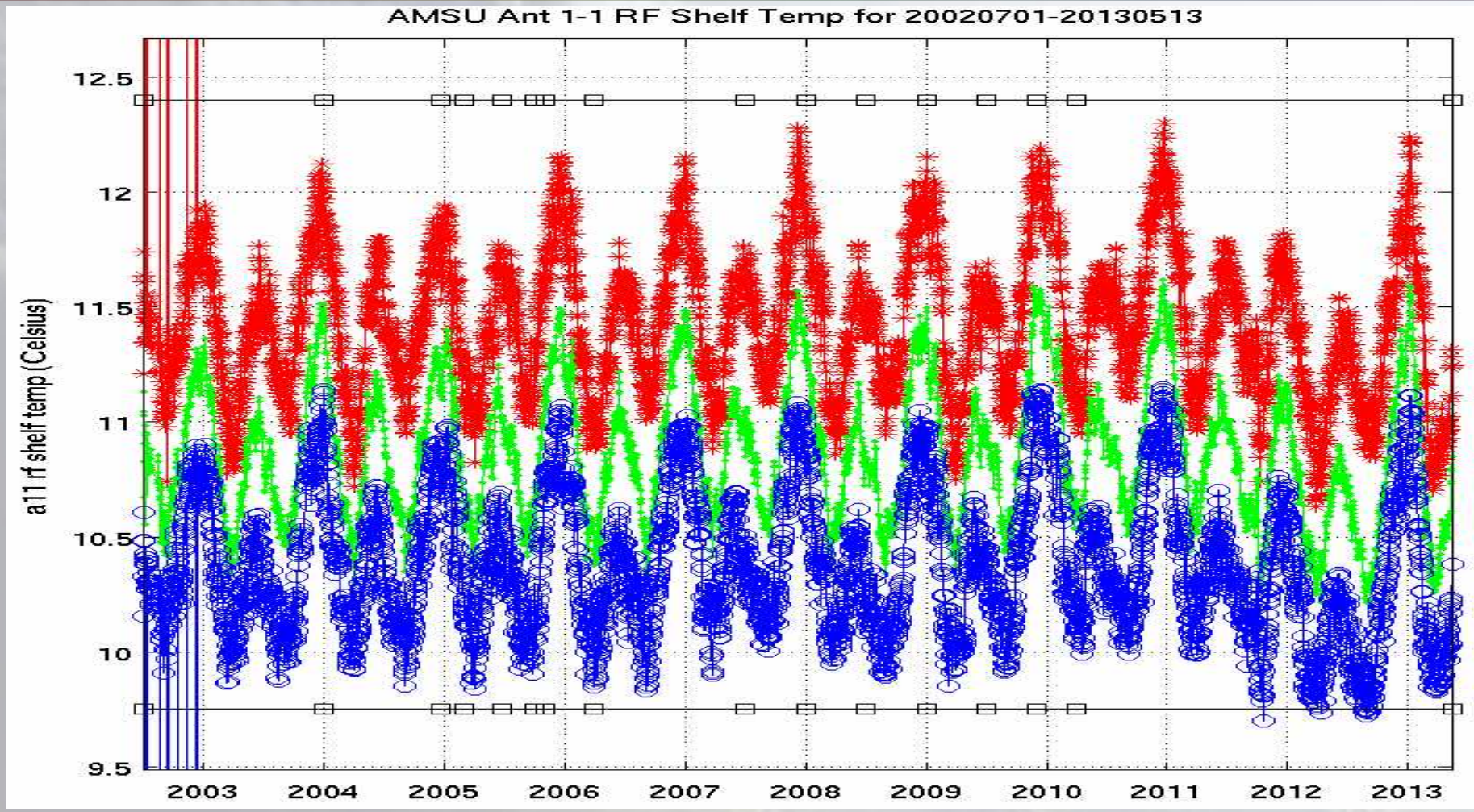
AMSU-A1-1 RF Shelf Temperature



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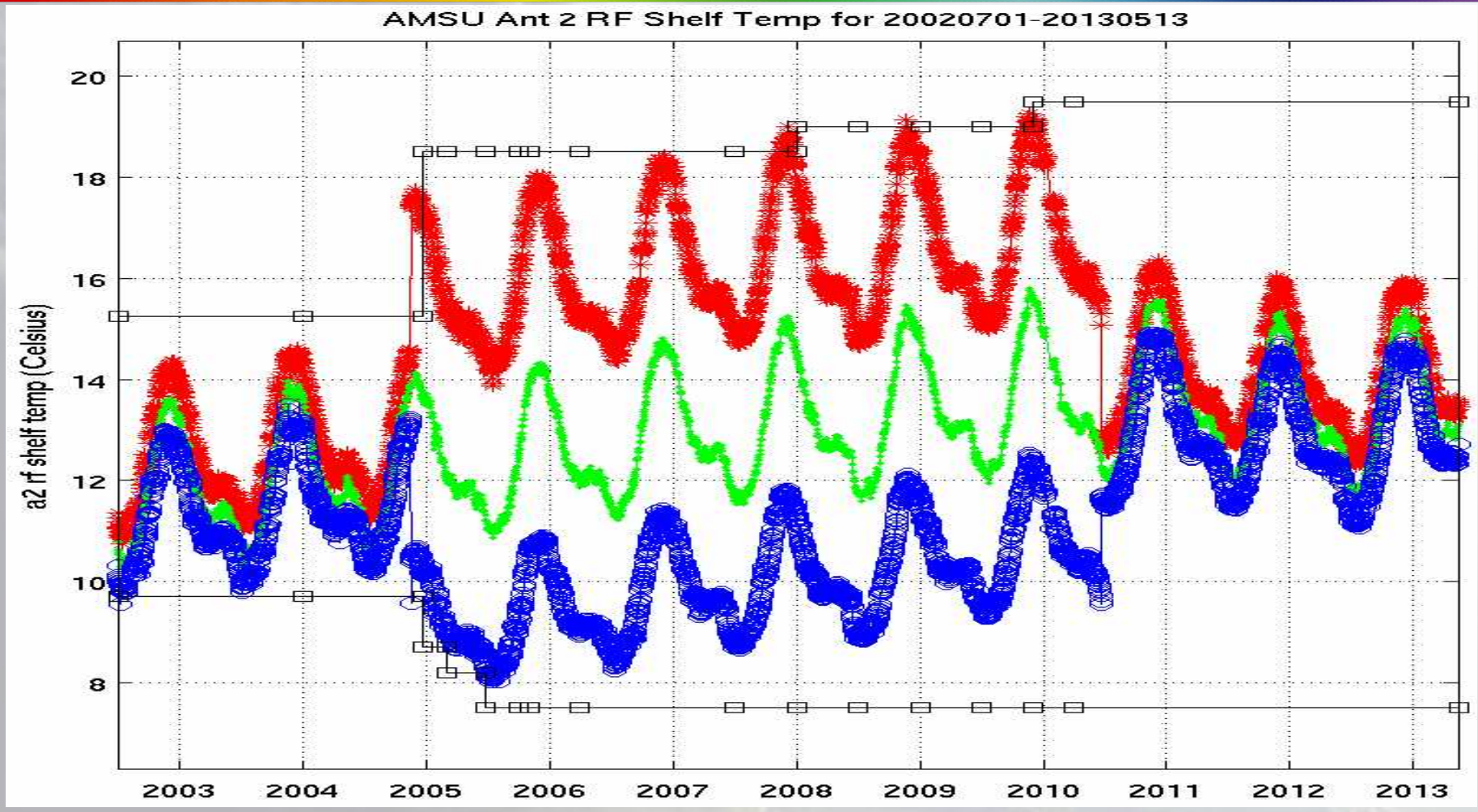
AMSU-A2 RF Shelf Temperature



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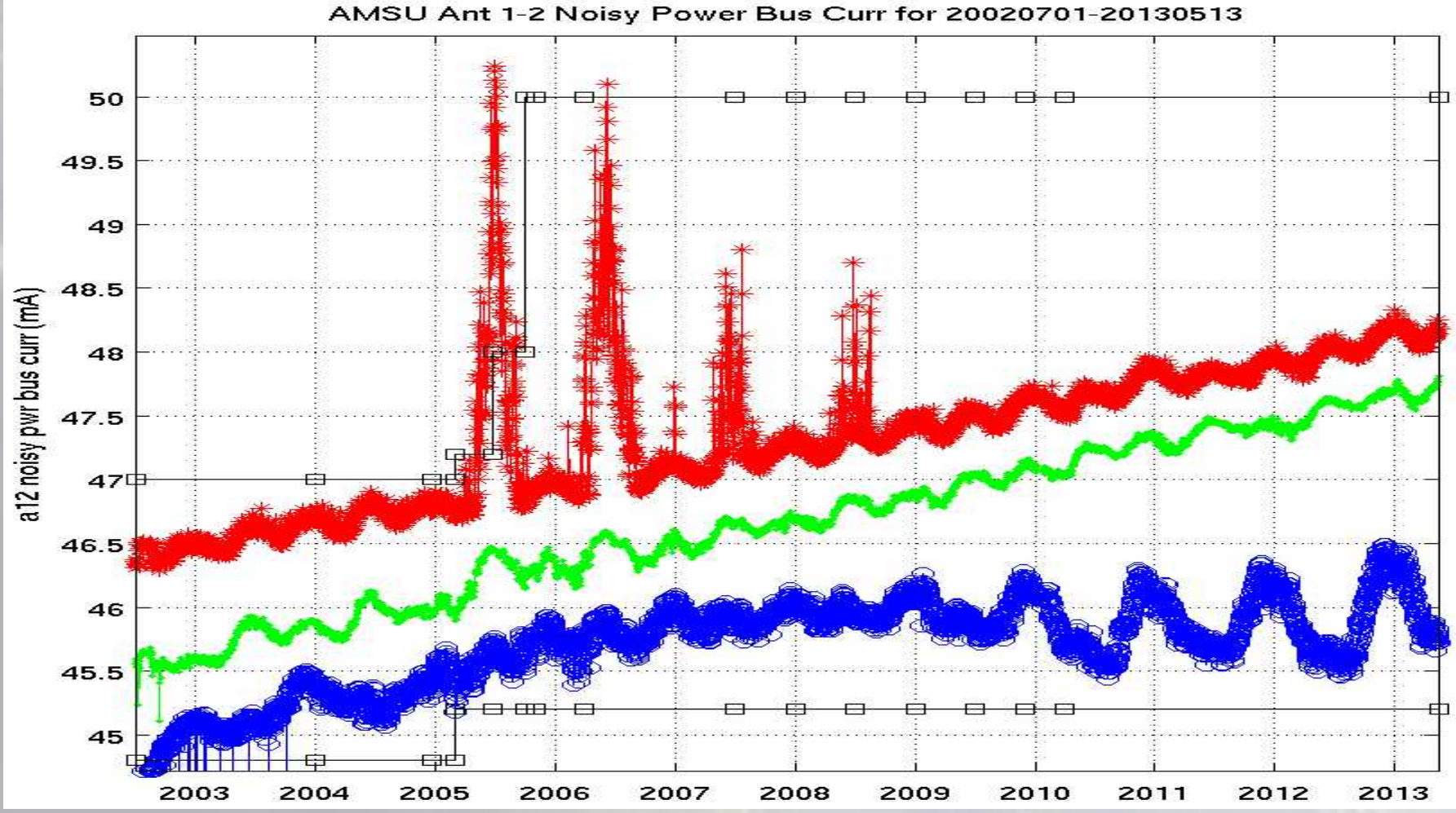
AMSU-A1-2 Noisy Bus Current



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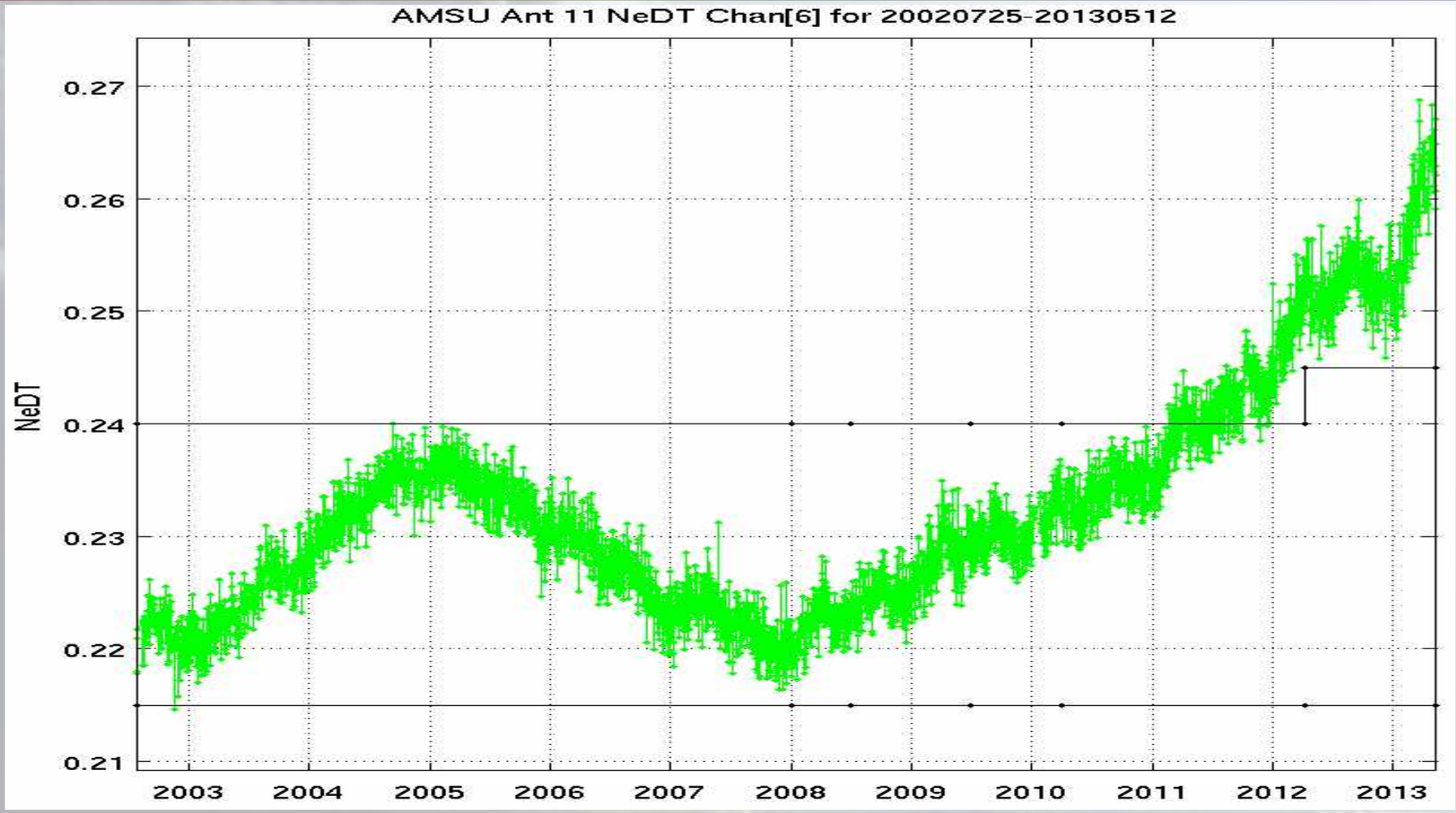
AMSU-A Channel 6 NEΔT



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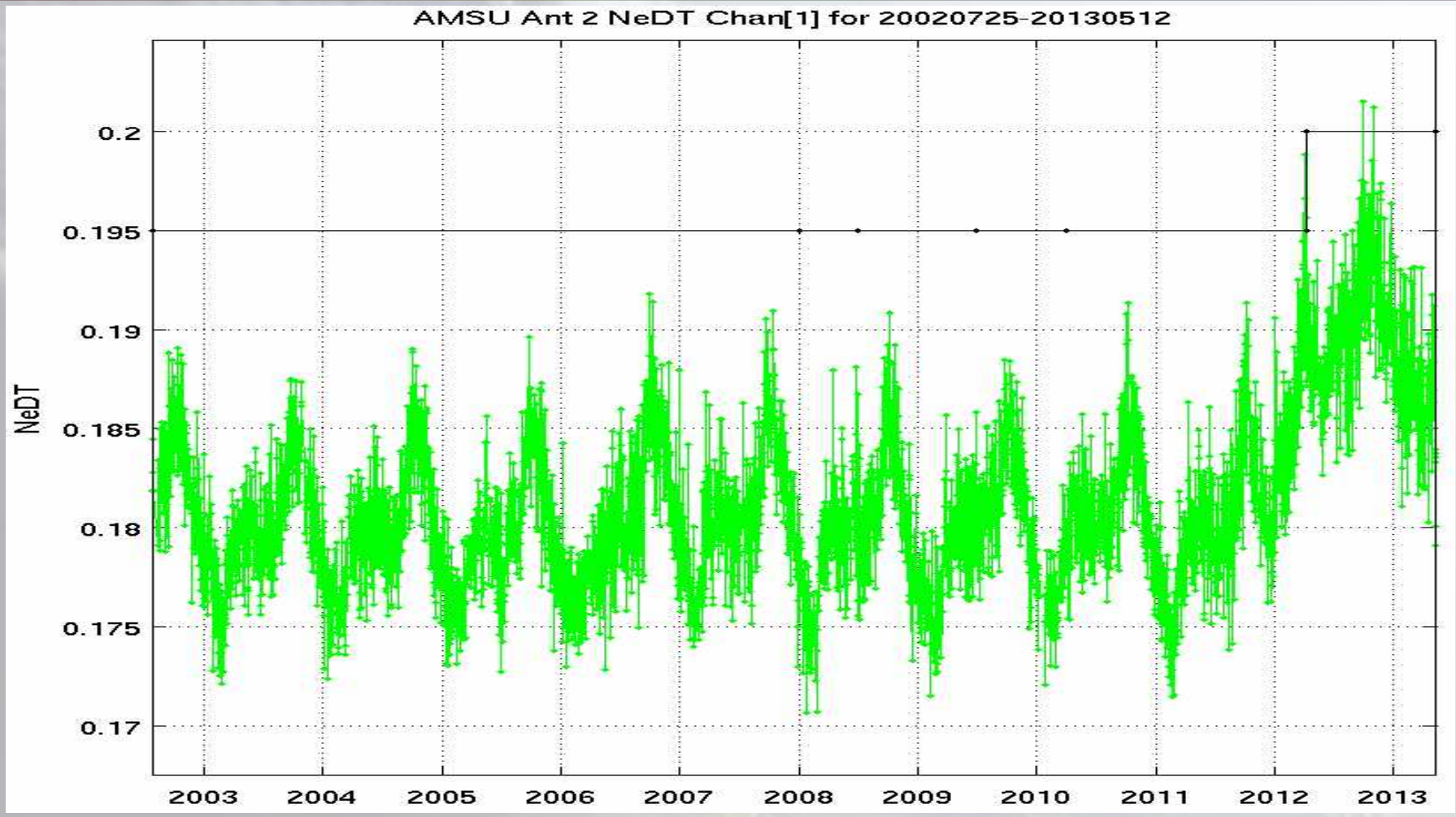
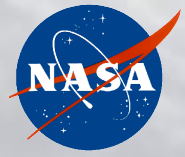
AMSU-A Channel 1 NEΔT





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Aqua Status And Anomalies

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Aqua Spacecraft Health Status

- **Aqua is in very good health**
- **Several anomalies have occurred over the years, but none have impacted operations yet**
  - ***Solar array***
    - Potentiometers used for orientation are noisy
    - Thermistor failure on one panel
    - Array Regulator Electronics—power drops that gradually return to normal
  - ***FMU/SSR hardware timeouts***
  - ***Battery***
    - Pressure too high early in mission but now in control
    - Power from one cell behaved erratically for several years but now seems OK
    - Temperature of one cell was high for part of a day
  - ***Computer memory bit errors***

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Aqua Fuel Supply

- **Occasional drag make up burns use only a very small amount of fuel**

- **Most fuel usage takes place in orbital inclination adjustment maneuvers, needed to keep Aqua properly aligned with other A-train instruments and to tightly control our 1:30 pm crossing time**
  - ***Three or four such maneuvers are planned every year, near the vernal equinox***
  - ***A recent estimate of future fuel usage indicates that the hydrazine should last at least until 2022, and possibly longer***

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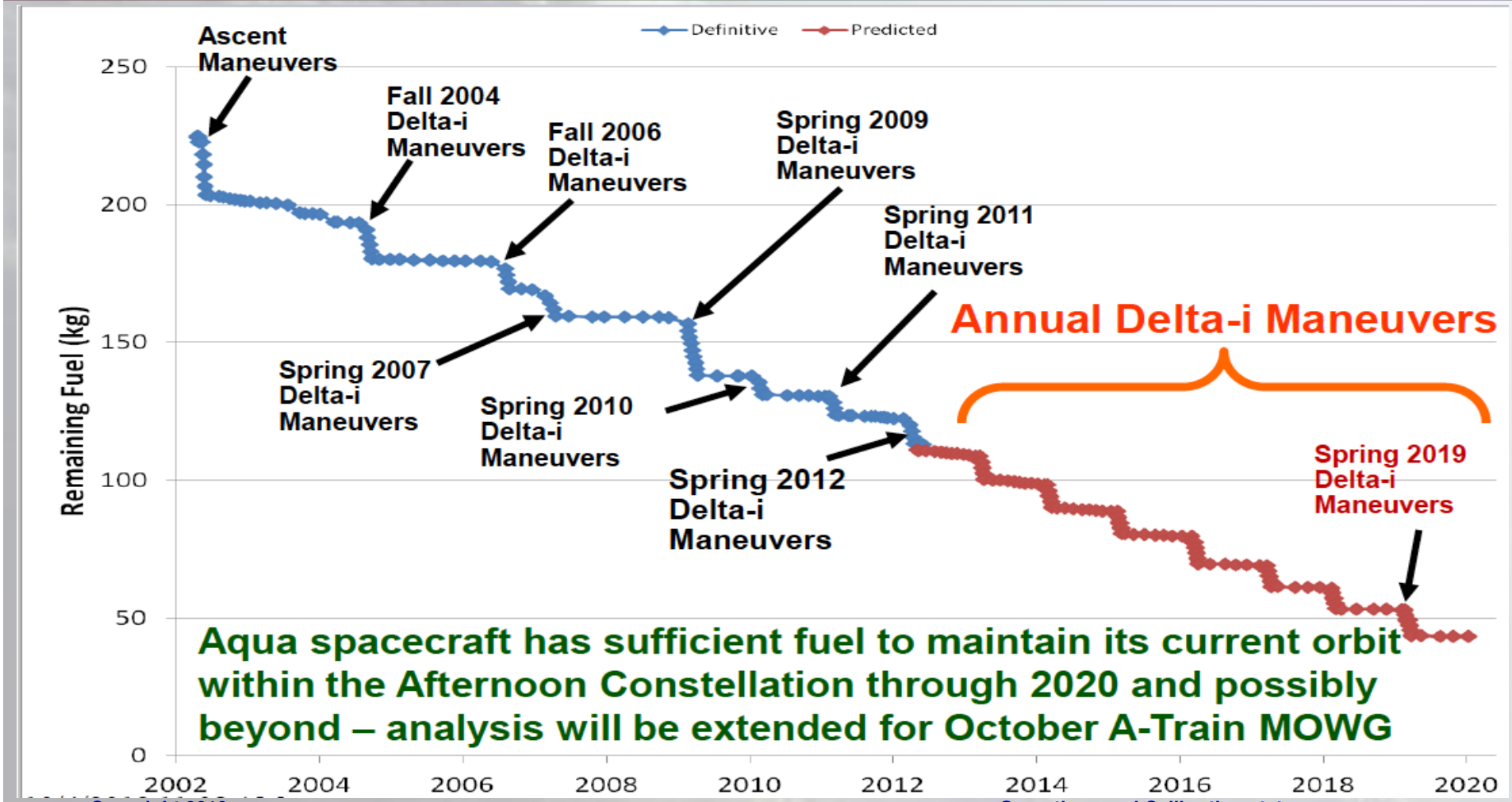
Projected Aqua Fuel Usage



Aqua spacecraft has sufficient fuel to maintain its current orbit within the Afternoon Constellation through 2020 and possibly beyond – analysis will be extended for October A-Train MOWG

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Calibration Status

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Calibration Team Activities

- **Verify radiometric and spectral stability**
  - ***Account for and correct for any instrument-related trends seen***
- **Deliver Level 1C**
- **Improve radiometric calibration coefficients and (if necessary) modify the Level 1B calibration equation**
  - ***Continue examining and reprocessing pre-launch data***
  - ***Make use of special in-flight calibration sequences***
  - ***Improve characterization of instrument-induced polarization***
  - ***Improve characterization of non-linearity***
  - ***Improve handling of space views***
  - ***Analysis of scan mirror temperature knowledge***
  - ***Analysis of lunar measurements***
  - ***Understand A/B differences in M8***

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Related Activities

- **Inter-instrument comparisons (AIRS, IASI, CrIS)**
  - ***Obs – Calc (also used for trend analysis)***
  - ***SNO's***
  - ***Measurements over Dome C***